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10/563,843	01/05/2006	Herbert Friedrich Boerner	DE030239	5650

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P.O. BOX 3001
BRIARCLIFF MANOR, NY 10510

EXAMINER	
WILSON, MICHAEL H	
ART UNIT	PAPER NUMBER
1794	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/563,843	BOERNER, HERBERT FRIEDRICH	
	Examiner	Art Unit	
	MICHAEL WILSON	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 December 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This Office action is in response to Applicant's amendment filed 5 December, 2008, which amends claims 3-9.

Claims 1-10 are pending.

2. The objection to the specification is withdrawn due to applicant's amending of the specification.

3. The objection to claim 9 for informalities is withdrawn due to applicant's amending of the claim.

4. The rejection of under 35 U.S.C. 112, second paragraph of claims 3-10, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention is overcome due to applicant's amending of the claims in the reply filed 5 December, 2008.

Claim Objections

5. Claim 6 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim 6 fails to further limit claim 1 given that the claim recites wherein the conductive fluorinated organic substance has a refractive index of ≤1.5 which would include values lower than 1.30, which are excluded from claim 1.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 1-10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Case law holds that applicant's specification must be "commensurately enabling [regarding the scope of the claims]" *Ex Parte Kung*, 17 USPQ2d 1545, 1547 (Bd. Pat. App. Inter. 1990). Otherwise **undue experimentation** would be involved in determining how to practice and use applicant's invention. The test for undue experimentation as to whether or not all compounds within the scope of claims 1-10 can be used as claimed and whether claims 1-10 meet the test is stated in *Ex parte Forman*, 230 USPQ 546, 547 (Bd. Pat. App. Inter. 1986) and *In re Wand*s, 8 USPQ2d 1400, 1404 (Fed.Cir. 1988). Upon applying this test to claims 1-10, it is believed that undue experimentation **would** be required because:

(a) *The quantity of experimentation necessary* is **great** since claims 1-10 read on a multitude of compounds whose only common feature is a single carbon with two fluorine atoms while the specification discloses only one compound of each different formula totaling 6 compounds.

(b) There is **no** *direction or guidance presented* for selecting fluorinated organic substances with a refractive index of 1.30 to 1.55. While the specification is enabling for the specific examples, guidance and direction is lacking for other compounds with different sized alkyl chains and different numbers of fluorine atoms. Further the specification lacks direction and guidance in the usage of appropriate substituent groups.

(c) There is a complete ***absence*** *of working examples*.

While the specification is considered enabling for the specific compounds disclosed to have a refractive index of 1.30 to 1.55, it is not enabling for other compounds within the claimed genus. There is a complete lack of guidance and direction for selecting other compounds with different sized alkyl chains and different numbers of fluorine atoms. Further the specification lacks direction and guidance in the usage of appropriate substituent groups. One of ordinary skill in the art would be required to physically test each and every compound, among the millions of potential compounds, in order to find a suitable compound. In light of the above factors, it is seen that undue experimentation would be necessary to make and use the invention of claims 1-10.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1 and 5, the claims are indefinite because they are in an improper Markush format. In claim 1 the conductor material is selected from the group comprising… and/or emitter material. In claim 5, the conductive fluorinated organic substance is selected from the group comprising… and/or phenanthroline. Claims 2-4, and 6-10 are indefinite by dependency.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1-7, 9, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Ueda et al. (US 2002/0094452 A1).

Regarding claims 1-7, Ueda et al. disclose a conductor material for an electroluminescent device (LEDs) [0001], which is a hole transporting material [0015], comprising a monomer triphenylamine compound [0018] conforming to instant formula XIX with at least one trifluoromethyl substituent with the general formula C_mF_{m+x} where

m = 1 and x = 2 ([0062], compounds 22-29, pages 9-11, compounds 39-41 and 43, pages 14-15).

Regarding the refractive index, while the reference does not disclose the refractive index of the compounds, the compounds are within the formula disclosed by applicant as having the claimed property. Therefore, since the compounds disclosed by Ueda et al. being within the formula claimed by applicant, the refractive index of the compounds would be expected inherently to have the same properties as disclosed by applicant. Recitation of a newly disclosed property does not distinguish over a reference disclosure of the article or composition claims. *General Electric v. Jewe Incandescent Lamp Co*., 67 USPQ 155. *Titanium Metal Corp. v. Banner*, 227 USPQ 773. Applicant bears responsibility for proving that reference composition does not possess the characteristics recited in the claims. In *re Fritzgerald*, 205 USPQ 597, In *re Best*, 195 USPQ 430.

Regarding claims 9 and 10, Ueda et al. disclose all the claim limitations as set forth above. Additionally the reference discloses wherein an electroluminescent device (OLED) comprises one or more layers ([0012] and [0063]-[0070]) which comprises a luminous means ([0063] light-emitting layer).

12. Claims 1-7, 9, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Naito (US 2002/0106531 A1).

Regarding claims 1-7, Naito discloses a conductor material for an electroluminescent device (LEDs) [0009], which is a electron and hole transporting

([0010]; [0030] compound H9 and H11), as well as emitting compounds ([0027] compounds D2-D4), which is a monomer or polymer with at least fluorinated alkyl substituent with a general formula of C_mF_{m+x} ([0027] compounds D2-D4; [0030] compound H9 and H11)). The reference discloses the metal complexes D-2 to D-4 as light emitting material [0027], and polyfluorene (instant formula XX) and polyphenylene as host material for the light-emitting layer [0030]. While the reference does not explicitly disclose the polymers as hole and electron transporting, host material for the light-emitting layer must inherently be hole and electron transporting for the device to be functional.

Regarding the refractive index, while the reference does not disclose the refractive index of the compounds, the compounds are within the formula disclosed by applicant as having the claimed property. Therefore, since the compounds disclosed by Naito being within the formula claimed by applicant, the refractive index of the compounds would be expected inherently to have the same properties as disclosed by applicant. Recitation of a newly disclosed property does not distinguish over a reference disclosure of the article or composition claims. *General Electric v. Jewe Incandescent Lamp Co*., 67 USPQ 155. *Titanium Metal Corp. v. Banner*, 227 USPQ 773. Applicant bears responsibility for proving that reference composition does not possess the characteristics recited in the claims. In *re Fritzgerald*, 205 USPQ 597, In *re Best*, 195 USPQ 430.

Regarding “n” in the formula of polyfluorene, while the reference does not explicitly disclose a range for n, it would be readily apparent to one of ordinary skill in

the art that the range of 1 to 10,000,000 in the present claim would be embraced by the reference given that the reference teaches polyfluorene as a polymer.

Regarding claims 9 and 10, Naito discloses all the claim limitations as set forth above. Additionally the reference discloses wherein an electroluminescent device (OLED) comprises one or more layers [0016] which comprises a luminous means ([0016] light-emitting layer).

13. Claims 1-6, 9, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Okada et al. (US 2003/0091861 A1).

Regarding claims 1-6, Okada et al. disclose a conductor material for a light-emitting device (LEDs) [0007], which is an electron transporting material [0144], comprising a monomer aryl compound ([0097] compounds 116 page 41) with at least one trifluoromethyl substituent with the general formula C_mF_{m+x} where m = 1 and x = 2.

Regarding the refractive index, while the reference does not disclose the refractive index of the compounds, the compounds are within the formula disclosed by applicant as having the claimed property. Therefore, since the compounds disclosed by Okada et al. being within the formula claimed by applicant, the refractive index of the compounds would be expected inherently to have the same properties as disclosed by applicant. Recitation of a newly disclosed property does not distinguish over a reference disclosure of the article or composition claims. *General Electric v. Jewe Incandescent Lamp Co.*, 67 USPQ 155. *Titanium Metal Corp. v. Banner*, 227 USPQ 773. Applicant bears responsibility for proving that reference composition does not

possess the characteristics recited in the claims. In *re Fritzgerald*, 205 USPQ 597, In *re Best*, 195 USPQ 430.

Regarding claims 9 and 10, Okada et al. disclose all the claim limitations as set forth above. Additionally the reference discloses wherein an electroluminescent device (OLED) comprises one or more layers [0033] which comprises a luminous means ([0033] light-emitting layer).

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

15. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

16. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okada et al. (US 2003/0091861 A1) in view of Ise et al. (US 2002/0028329 A1).

Regarding claim 7, Okada et al. disclose all the claim limitations as set forth above. Additionally the reference discloses aryl compounds with benzoimidazole

derivatives with on carbon of the benzene ring replaced by nitrogen. However the reference does not explicitly disclose an aryl compound with benzoimidazole derivatives with no additional nitrogen atoms.

Ise et al. teach numerous imidazole containing compounds for use in light-emitting devices [0002]. The reference teaches similar aryl compounds with benzoimidazoles with and without an additional nitrogen atom ([0119] pages 14-41).The reference demonstrated to one of ordinary skill in the art that compounds with and without a nitrogen atom on the "benzene" portion of the benzoimidazole are both suitable by teaching compound which only differ by the single nitrogen as both suitable (for example compounds B-10 vs. B-14 and B-40 vs. B-44).

Therefore it would be obvious to one of ordinary skill in the art at the time of the invention, given the teachings of Ise et al. that the nitrogen in the "benzene" portion of the benzoimidazole in compound 116 of Okada et al. is interchangeable with carbon resulting in a compound suitable for use in a light-emitting device, arriving at instant formula X.

17. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Naito (US 2002/0106531 A1).

Regarding claim 8, Naito discloses all the claim limitations as set forth above. Additionally the reference discloses a polyfluorene with two fluorinated butyl substituents in the 9-position (compound H9, page 4). The reference does not explicitly disclose fluorinated octyl groups in the 9-position.

However, fluorinated butyl and fluorinated octyl are homologs - compounds differing regularly by the successive addition of the same chemical groups, in the present instance, the compounds only vary by the length of the carbon chain, and the courts have held, as found in *In re Wilder*, 563 F.2d 457, 195 USPQ 426 (CCPA 1977), that compounds which are homologs "are generally of sufficiently close structural similarity that there is a presumed expectation that such compounds possess similar properties".

In light of the case law cited above, it therefore would have been obvious to one of ordinary skill in the art that the fluorinated octyl disclosed in the present claims is but an obvious variant of the fluorinated butyl disclosed in Naito, and thereby one of ordinary skill in the art would have arrived at the claimed invention.

Response to Arguments

18. Applicant's arguments filed 5 December, 2008 have been fully considered but they are not persuasive.

Applicant argues regarding Ueda et al. (US 2002/0094452 A1), that although each "benzene" ring neighboring the nitrogen atom has a fluorinated alkyl substituent (CF3), the neighboring "benzene" rings are bonded to additional methyl groups and "benzene" rings. Thus, applicant asserts, the compounds of Ueda et al. does not anticipate formula XIX because each "benzene" ring neighboring the nitrogen atom in compound 22 does not have one bonded group besides the nitrogen bond. However the examiner notes that the compounds of Ueda et al. are within the formula claimed by

applicant and that applicant failed to present any evidence that the compounds meeting the present claims do not posses a refractive index between 1.30 and 1.55.

Regarding Naito (US 2002/0106531 A1) applicant argues that in formula XX each fluorene substituent is consistently bonded to the same R1 and R2 groups and the end groups of the molecule or polymer are hydrogen atom. However compound H9 of Naito clearly demonstrates a "consistently bonded" polyfluorene. No other substitution is disclosed for the 9-position of the polyfluorene H9 besides the fluorinated butyl group which is disclosed in both instant R1 and R2 positions. Further while the end groups are not explicitly disclosed one of ordinary skill in the art would readily and immediately understand that a polyfluorene with hydrogen ending groups is embraced by compound H9.

Applicant also argues that the compounds of Natio are doped with a luminescent dye molecule and therefore can not anticipate the present claims. However the examiner notes that the features upon which applicant relies (i.e., a conductor material with no dopants) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Furthermore applicant argues regarding both Naito and Okada et al. (US 2003/0091861 A1) that regarding the disclosure of fluorinated substituents with a general formula of C_mF_{m+x}, the Applicant has not asserted that every molecule or polymer with a fluorinated substituent has a refractive index of between 30 and 1.55. Rather, the Specification states that aspects of the present principles are directed to

conductive fluorinated organic substances with a refractive index of between 1.30 and 1.55 that simply include fluorinated substituents. However the examiner notes that applicant has included all compounds with fluorinated substituents having a general formula of C_mF_{m+x} within the present claims no other distinguishing feature save the inherent physical property of refractive index. Additionally applicant has presented no evidence supporting the position that compounds with fluorinated substituents having a general formula of C_mF_{m+x} do not meet the present claims. Further, with the exception of claims 7-8, it is noted that there is no specific fluorinated organic substance required in the present claims. The claims only require conductor material that is hole conductor, electron conductor, or emitter material having a specific substituent which is clearly met by each of the cited prior art.

Regarding the rejection of claim 7 as being unpatentable over Okada et al. in view of Ise et al. (US 2002/0028329) applicant argues that Ise et al. teach that other aryl compounds with benzoimidazoles may be used with and without an additional nitrogen atom and Ise et al. does not teach or remotely suggest that the fluorinated aryl compounds Okada et al. may be used without an additional nitrogen atom. However the examiner notes that both references teach similar imidazole compound which are suitable or the same purpose (electron transport material). Ise et al. teach benzoimidazole and pyridylimidazole groups as interchangeable. Therefore it would be obvious to one of ordinary in the art at the time of the invention to replace the pyridylimidazole of Okada et al. with a benzoimidazole group as taught by Ise et al.

Regarding the rejection of claim 8 as being unpatentable over Naito et al., applicant restates the arguments concerning Naito et al. answered above and further argues that the octyl homologue of butyl would not be obvious and that a fluorinated 9,9-dioctyl-polyfluorene would not make obvious instant formula XXVI, which is a fluorinated 9,9-dioctyl-polyfluorene. However applicant failed to present any evidence to support this position. As the examiner stated above the courts have held, as found in *In re Wilder*, 563 F.2d 457, 195 USPQ 426 (CCPA 1977), that compounds which are homologs "are generally of sufficiently close structural similarity that there is a presumed expectation that such compounds possess similar properties" and therefore would have been obvious to one of ordinary skill in the art at the time of the invention.

Conclusion

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL WILSON whose telephone number is (571) 270-3882. The examiner can normally be reached on Monday-Thursday, 7:30-5:00PM EST, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on (571) 272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

20. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MHW

/Callie E. Shosho/
Supervisory Patent Examiner, Art Unit 1794